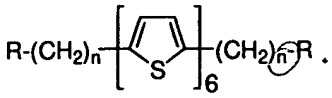
CLAIMS

1. A structure comprising a sexithiophene:

   where the α- and ω-carbons of the terminal thiophene rings are substituted with alkyl groups having a polar functionality at their terminal carbons; and



2. A structure of claim 1, where the alkyl groups on both ends have from one to 10 carbons, preferably from 2-6 carbons.

3. A structure of claim 2 where alkyl groups on the terminal rings are substituted at their terminal carbon atoms by a polar functionality.

4. A structure of claim 3 where the polar functionality is a dialkyl phosphonate group.

5. A structure of claim 3 where the polar functionality is a phosphonic acid group.

6. A structure of claim 3 where the polar functionality is a carboxylic acid group.

7. A structure of claim 3 where the polar functionality is a carboxylic ester group.

8. A structure of claim 3 where the polar functionality is an amino group.

9. A structure of claim 3 where the polar functionality is an amide group.

10. A structure of claim 3 where the polar functionality is a hydroxyl group.

11. A field effect transistor comprising:

    a source region and a drain region;

    a channel layer extending between said source region and said drain region, said channel layer comprising a semiconducting organic material;

    a gate region disposed in spaced adjacency to said channel layer, and

    an electrically insulating layer between said gate region and said source region, drain region, and channel layer.

12. A field-effect transistor as set forth in claim 11, where said source region, channel layer and drain region are disposed upon a surface of a substrate, said electrically insulating layer is disposed over said channel layer and extending from said source region to said drain region, and said gate region is disposed over said electrically insulating layer.
13. A field effect transistor as set forth in claim 11, where said gate region is disposed as a gate layer upon a surface of a substrate, said electrically insulating layer is disposed upon said gate layer, and said source region, channel layer, and drain region are disposed upon said electrically insulating layer.
14. A field effect transistor as set forth in claim 11, wherein said organic material is a sexithiophene derivative of claim 1.
15. A field effect transistor as set forth in claim 14, wherein said sexithiophene is applied from a solution of said sexithiophene in an organic solvent.
16. A field effect transistor as set forth in claim 14, wherein the organic material is applied by high vacuum evaporation techniques.
17. A field effect transistor as set forth in claim 11, where the substrate is a flexible material.
18. A field effect transistor as set forth in claim 11, wherein the substrate is comprised of a plastic material.

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